REMARKS

This letter is in response to the Examiner's Action dated 5 August 2005. Please find enclosed with this paper a Declaration by Mark Harrison, PhD that demonstrates the patentable differences between a substituted CD as shown in the art and a CD-grafted polymer. Applicants respectfully request reconsideration of the pending claims in view of the above amendments, the declaration and the following comments.

The claims have generally amended to indicate that the CD-containing polymer is a grafted polymer. The generic "modified" language is no longer used. Claim 18 has been amended to correct a typographical error. Claim 99 has been canceled. Claims 16-31 and 82-98 are currently pending. No new matter has been inserted.

The Examiner notes that drawings 2-6 are not readable. In response, Applicants note that replacement drawings are being reviewed. Applicants have reviewed Figures 2-6 and the original photograph precursor documents. The figures were intended to show the acceptable appearance of the film and that the film dose not suffer cosmetically resulting from the inclusion of the materials of the invention in the film. However, the creation of the figures from the original photographs do not show the detail required and are not believed to be sufficiently detailed to provide a figure that will provide any meaningful information. Applicants continue to work with these materials. Since the figures may not be necessary with respect to understanding the meets and bounds of the claims or the technical aspects of the specification, Applicants may amend the case and cancel the figures without harm to the patentability of the application. See M.P.E.P. 601.01(f), see also 608.02(iii).

Objections:

The Examiner objected to claim 18 for a typographical error and 99 for being a duplicate of claim 98. In response, claim 18 has been amended and claim 99 has been canceled in order to obviate the objections of the Examiner. Applicants respectfully request that the objections be withdrawn.

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Rejections:

In paragraphs 1-5 and 8-10, claims 16-31 and 82-99 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-65 of co-pending application no. 11/023,288, U.S. Patent Publication No. 2005/0131119 A1 or claims 1-18 of co-pending application No. 10/656,670, U.S. Patent Publication No. 2005/0053784 A1. Applicants request that the Examiner hold this rejection in abeyance until allowable subject matter is otherwise indicated. Once patentable subject matter is found, Applicants will consider the appropriateness of filing a Terminal Disclaimer to obviate the double patenting rejection.

In paragraphs 6 and 7, claims 16-31 and 82-99 were rejected under 35 U.S.C. § 103(a) as obvious over Wood (Pub. No. US 2005/0131119). Applicants respectfully traverse this rejection.

The Examiner alleges that Pub. No. US 2005/0131119 serves as prior art against the present application under 35 U.S.C. § 102(e). However, Applicants point out that the present application claims priority to U.S. Provisional Application No. 60/432,523, filed December 10, 2002. As the earliest priority date of Wood (Pub. No. US 2005/0131119) is also December 10, 2002, Wood cannot serve as prior art against the present application under 35 U.S.C. § 102(e) since they share the same priority. Therefore, Applicants respectfully assert that Wood (Pub. No. US 2005/0131119) cannot properly be used in the rejection under 35 U.S.C. § 103(a). Applicants respectfully request that this rejection be withdrawn.

In paragraphs 11 and 12, claims 16-31 and 82-99 were rejected under 35 U.S.C. § 103(a) as obvious over Wood (Pub. No. US 2005/0053784). Applicants respectfully traverse this rejection.

The Examiner states that Pub. No. US 2005/0053784 serves as prior art against the present application "only under 35 U.S.C. 102(e)." In response, Applicants assert that the present invention and Wood (Pub. No. US 2005/0053784) were, at the time the present invention was made, owned by, or subject to an obligation of assignment to, Cellresin Technologies, L.L.C. Accordingly, Applicants assert that the reference is disqualified under 35 U.S.C. § 103(c) as prior art in a rejection under 35 U.S.C. § 103(a). Applicants respectfully request that this rejection be withdrawn.

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In paragraphs 13 and 14, claims 16-31 and 82-99 are rejected under 35 U.S.C. § 103(a) as unpatentable under Wood et al. (U.S. Patent No. 5,882,565). Applicants respectfully traverse this rejection.

Wood '565 discloses "a barrier film composition can comprise a thermoplastic web comprising a thermoplastic polymer and a dispersed cyclodextrin composition having substituents that compatibilize the cyclodextrin in the film." The Wood references teach small molecule substituents and do not teach large polymer groups bonded to the cyclodextrin. Wood '565 further fails to disclose or suggest a "modified (or grafted) polyolefin resin comprising a polymethylene backbone having randomly substituted covalently bonded groups derived from a cyclodextrin compound" as required by claim 16. Similarly, Wood '565 fails to disclose a "modified (or grafted) polyolefin resin comprising a cyclodextrin bonded to a backbone carbon of the polymer through a maleic acid residue or to a carbon in a pendent group through a maleic acid residue" as required by claim 82.

The Examiner concedes that Wood '565 does not disclose bonding cyclodextrin on to a backbone of the polymer through a maleic acid residue. However, the Examiner alleges that since Wood '565 discloses a chemical reaction of the primary or secondary hydroxyls of the cyclodextrin with an acid anhydride for producing a derivatized cyclodextrin that "it would have been obvious to one of ordinary skill in the art to consider that an acid anhydride group can include maleic acid anhydride being grafted on to [a] polyolefin backbone such that a chemical reaction is obtained between the primary or secondary hydroxyls of the cyclodextrin with [an] acid anhydride group for producing a modified polyolefin".

In response, Applicants note that in order to establish a *prima facie* case of obviousness, that the reference must suggest each element of the claim and there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine the reference teachings without hindsight to the claimed invention. *See In re Vaeck*, 20 USPQ.2d (Fed. Cir. 1991); MPEP § 2143 *et seq.*

In this case, all elements are not taught. The teaching of a grafted polymer is not found. Even if the grafting was known, the required suggestion or motivation is absent to use such a material in this composition. The Examiner has failed to establish a prima facie case. There is simply no suggestion or motivation whatsoever in Wood '565 to form a "modified (or grafted)

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polyolefin resin comprising a polymethylene backbone having randomly substituted covalently bonded groups derived from a cyclodextrin compound" as required by claim 16, or a "modified polyolefin resin comprising a cyclodextrin bonded to a backbone carbon of the polymer through a maleic acid residue or to a carbon in a pendent group through a maleic acid residue" as required by claim 82. Therefore, at least because there is no suggestion or motivation to modify the reference, Wood '565 fails to render the invention of claims 16 or 82 obvious. As claims 17-31 are dependent on claim 16, they are also not obvious. As claims 83-99 are dependent on claim 82, they are also not obvious. For at least these reasons, Applicants respectfully request that this rejection be withdrawn.

Further, in this art a cyclodextrin with a small substituent is patentably distinct from a CD-grafted polymer. Due to the differences between these materials one of ordinary skill would not substitute one for the other. Typically, cyclodextrin is used in applications using the water-soluble nature of the material. Most derivatives or small molecular weight cyclodextrin derivatives are highly water soluble and used for solubilization of hydrophobic groups, stabilization in the dry state, controlled release and modification of odor or taste. The derivative is usually; hydroxypropyl, methyl or other alkylated groups, acetyl or other acyl groups, aromatics, etc. (Harrison Aff'd ¶ 4). Less water soluble cyclodextrin materials are quite different. Grafting cyclodextrin onto a polymer is fundamentally different from derivatizing the cyclodextrin with a normal organic moiety. (Harrison Aff'd ¶ 5). Prior to the introduction by Mr. Willard E. Wood of polymer compatible cyclodextrins, cyclodextrins were almost always used in aqueous environment. Mr. Wood is the first to attempt to make cyclodextrins compatible with polymer materials. (Harrison Aff'd ¶ 8)

In somewhat greater detail, the factual basis for this difference includes the following:

a. Small molecular weight cyclodextrin derivatives typically have molecular substitution (number of derivatives per cyclodextrin) of 3 to 15 derivatizing groups. Cyclodextrins grafted onto polyolefin will have molecular substitution of about 1. (Harrison Aff'd ¶ 5a)

b. Typical molecular weight of normal cyclodextrin derivatives is about 973 – 5000 depending on cyclodextrin. Typical polymer molecular weight is 100,000 or more. Molecular weight of the derivative reagent for small molecular weight cyclodextrin derivatives is 50 to 150, for graftable polyolefin the molecular weight is about 20,000 to greater than 100,000. Molecular

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weight percent of derivative reagent for small molecular weight cyclodextrin derivatives is 10% to 20%, for the grafted polymer it is 95% to 99%. (Harrison Aff'd ¶ 5b)

c. Cyclodextrins with many peripheral -OH groups are hydrophilic and inherently incompatible with polyolefins, which are hydrophobic. Derivatizing cyclodextrins with organic functional groups will make cyclodextrins more compatible with the polyolefin matrix. The higher the degree of substitution with organic groups the more compatible the material will be with polyolefins. (Harrison Aff'd ¶ 5c)

d. Small molecular weight cyclodextrin derivatives are produced in the liquid phase using a solvent, e.g. methylation or hydroxypropylation uses the water as the solvent; acetylation uses acetic acid/anhydride as a solvent. The grafting process uses an extruder or other melt processor, with no solvent. (Harrison Aff'd ¶ 5d)

e. Typically, the main reason for derivatizing cyclodextrins is to improve water solubility, so that cyclodextrins can be used to solubilize low molecular weight hydrophobic compounds like drug actives. Note cyclodextrin derivatives with a reactive group have been prepared and they have been used to fix the cyclodextrin onto hydrophilic substrates like cotton, cellulose, etc. or to make cyclodextrin polymers. (Harrison Aff'd ¶ 5e)

The Examiner's statement that a blend of a small substituent derivatized modified compatible cyclodextrin with polyolefin is a "modified polyolefin: is not correct in this technology. The cyclodextrin is not modified unless the cyclodextrin in covalently bonded to the molecule. Unless the "derivatized modified compatible cyclodextrin" is grafted to the polyolefin it will potentially leach out losing the ability to function as required. A cyclodextrin grafted onto the polyolefin backbone will not leach out. (Harrison Aff'd ¶ 6) Applicants have amended the claims to recite that the polyolefin is "grafted" not "modified."

The Wood et al. reference cited by the Examiner is an initial step in attempting to make cyclodextrins compatible in a polymer material. While small molecules substituted cyclodextrins have some compatibility with polymers and can act to prevent the transmission of volatile materials from polymer layers, improvements are required. (Harrison Aff'd ¶ 9). For that reason, attention was directed to developing a different technology, i.e., grafting cyclodextrins on to a polymer backbone. The grafted polymers are then adapted for blending into bulk polymer layers. (Harrison Aff'd ¶ 10). In conclusion, recognizing that small substituent derivatives of cyclodextrin such as acetyl cyclodextrin, alkyl ether cyclodextrin and

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hydroxyl alkyl ether cyclodextrin can be manufactured, one of ordinary skill in the art could not readily adapt this technology to polymer grafted cyclodextrins. The materials are substantially different in the manner discussed above. Based on the differences summarized above, the simple small molecule substituent substituted cyclodextrin is such a completely different chemical entity from a cyclodextrin grafted polyolefin that one of ordinary skill in the art would not readily substitute the cyclodextrin grafted polyolefin for a small molecule substituted cyclodextrin in this polymer packaging technology. (Harrison Aff'd ¶ 7)

In view of the above amendments and remarks, Applicants respectfully request a Notice of Allowance. If the Examiner believes a telephone conference would advance the prosecution of this application, the Examiner is invited to telephone the undersigned at the below-listed telephone number.

Respectfully submitted,

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Date

Mark DiPietro

Mark DiPietro
Reg. No. 28,707
MERCHANT & GOULD P.C.
P.O. Box 2903
Minneapolis, MN 55402-0903
Telephone: (612) 371-5375
E-mail: mdipietro@merchant-gould.com

MD:MED:kf

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